The Effect of Familiarity of Metaphor Comprehension

Ethics approval number: 2012/232

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Defining Metaphors, Familiarity and Salience, Lexical Decision, and Aims of research

This study investigated a linguistic phenomenon known as metaphors – the non-literal usage of terminology that link abstract concepts together using literally unrelated words. A good example of this would be comparing *a boy's untidy room to a shipwreck* – this is literally improbable, and in fact serves as a metaphor for how messy the room actually is. Metaphors, along with humour, sarcasm, and idioms, have been studied in psycholinguistic research for decades; this topic is not novel. The interpretation of metaphor, owing to its non-literal and therefore abstract conceptual base, is considered to be a higher-level process that is computationally harder than interpreting literal language. As such, it is of interest to determine the factors that influence the comprehension of metaphors.

One such factor that influences metaphorical comprehension is familiarity. Familiarity is the extent of exposure an individual has subjectively had to a given stimulus. For example, the sight of the sun in the morning is typically considered a familiar sight, whereas the sight of an underground lake would be perceived as unfamiliar to a city-dwelling individual who has spent all of his/her life in the city. This effect of familiarity influences the ability of an individual to quickly assess and interpret metaphors, as there is a crucial processing phase involved that joins the metaphorical content with the context of the sentence. This phase begins with the recognition of the metaphorical context, which is provided by a sentential prime. Going back to the previous example, "*the boy's untidy room was a …*" gives a rough reference to what the next word would pertain to; this is most likely to be a word (*shipwreck*) or phrase (*pig sty*) that describes the room. If such words and phrases had been encountered before in similar descriptive contexts, "*this messy man's car is a pig sty*" it is likely that the individual will be able to have a familiarity effect in processing the sentence more quickly or accurately. Consequently, the reverse is also true – a lack of familiarity with a given metaphorical word or phrase may lead to a slower or more inaccurate processing of a given sentence. This is attributed in some theoretical accounts to the effect of salience, not familiarity. Salience is a larger concept that encompasses "conventionality, familiarity, frequency" in a given context. The definition of salience leads to an emphasis on semantic representation, not on the frequency of presentation of a given utterance. This semantic representation is argued to be the key driver of metaphorical processing.

One way in which previous literature has investigated the processing of metaphors is through a lexical decision task. This involves the decision of whether the end-sentence word is an actual word, or not. As in the previous example of the boy, the end-sentence word is withheld from the individual for a short while, after which the word is presented after a fixation cross. Positioning of the word (to the left or right of the fixation cross) can influence which eye (and therefore which hemisphere) does initial recognition and processing of the end-sentence word. This makes it possible to examine hemisphere effects at the very initial processing stages of metaphor comprehension. The participant, after seeing the priming sentence, then the fixation cross, then the end-sentence word, is then required to press a button with a finger from both hands to indicate they believe the word was a word, or withhold response if it is not a word. Since this word is additionally presented to the left or right of the fixation cross, the specific task used is a split-field paradigm, go-nogo lexical decision task.

In summary, there is a good case for the examination of familiarity in metaphor comprehension. However, while previous literature has performed studies investigating this phenomenon, most studies have not controlled for crucial confounds – elements of metaphors that can produce effects not strictly related to the metaphorical content of a metaphor. This has led to a conflict in findings between studies that support and refute the role of familiarity in metaphor comprehension. Examples of such confounds are *literal plausibility*, the extent of conceivable literal interpretation of a metaphor, *decomposability*, plausibility of discerning the metaphor from individual component words, and *conventionalisation*, the polysemous (or multiple-context-use) quality of a repeatedly used word or phrase. A conventional phrase can therefore be heard often, but not subjectively perceived as familiar; in contrast, a familiar metaphor is always conventional.

The aim of this study, therefore, is to parse out the effect of familiarity in metaphor comprehension after controlling for all these confounding factors. Reaction time and accuracy of these responses will be recorded and facilitation effects calculated. Facilitation is defined as the difference in processing speed and accuracy between a context-primed word as opposed to a neutral (no prime) word. It is hypothesised that a) literal sentences will provide significantly larger facilitation effects compared to familiar metaphorical sentences for targets presented to either the right visual field (RVF)/ left hemisphere (LH) or the left visual field (LVF)/right hemisphere (RH). Additionally, it is hypothesised that b) familiar metaphorical sentences will have a significantly higher facilitation effect compared to unfamiliar metaphorical sentences, again for targets presented to either visual field. Furthermore, it is hypothesised that c) significantly greater facilitation will be observed for literal and familiar metaphorical content for targets presented to the RVF/LH than LVF/RH. Finally, it is hypothesised that d) significantly more facilitation of targets primed by unfamiliar metaphorical content will be observed for those presented to the LVF/RH than the RVF/LH.

Methodology

In total, 41 participants took part in the study. All participants were right-handed, spoke English as their first language, and had normal or corrected-to-normal vision. Participants were given a handedness questionnaire, and seated in front of a computer screen. They were shown sentences with end-sentence words removed, followed by a cross in the centre of the screen, then the end-sentence word to the left or right of the cross. The participant would then press a switch if it was a word, and withhold response if it was not. The speed at which the participant responded (in milliseconds) and the overall accuracy of the participant was recorded. This was repeated for a total number of 480 trials for word/non-word categories, familiarity of metaphor categories, and left/right hemisphere categories. Participants were then debriefed after this was achieved.

Findings

Our study looked to examine the effect of familiarity on metaphor comprehension, controlling for a number of factors that often confuse the research findings in prior studies. A popular finding was supported – the more straightforward and literal a sentence, the faster and more accurately we register it. Also, the left hemisphere processes language faster than the right. Reaction times were significantly faster when the left hemisphere first processed the stimuli, as opposed to the right. This was true even in familiar metaphors, where the left hemisphere showed itself processing faster than the right. However, after accounting for this processing speed and accuracy difference between hemispheres, there were no differences between hemispheres when it came to processing unfamiliar metaphors – this goes against the idea that the right hemisphere may be more suited to processing novel, unfamiliar material in our everyday lives. We suggest that there is an interaction between the ways our hemispheres process content,

and the nature of the stimuli themselves – this is a combination of two big theories that we believe work well together. More familiar stimuli are predicted better in the left hemisphere, which is specialised for that task; less familiar stimuli are integrated better in the right hemisphere, which is in turn specialised for that task. Our study contributed most in the area of creating a stringent set of stimuli that allow for us to examine familiarity in isolation, without previously confounding factors.